FIG. 1(b)

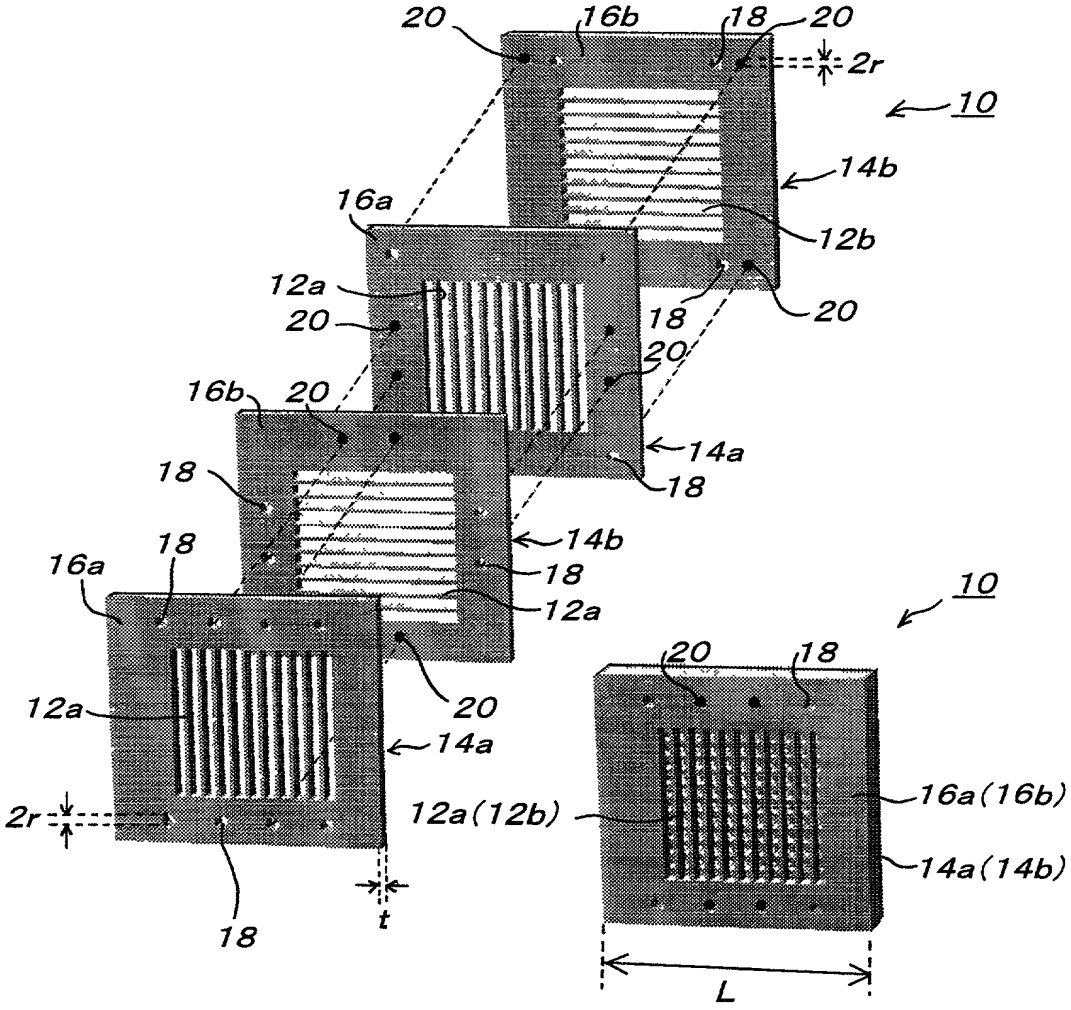

20
16b
18
20
2r
10
14b
16a
12b
12a
20
18
20
20
16b
20
14a
18
18
14b
16a
18
18
12a
10
20
18
12a
20
14a
16a(16b)
2r
12a(12b)
14a(14b)
18
t
L

FIG. 1(a)

FIG. 2(a)

FABRICATION OF AIR BRIDGE TYPE TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE

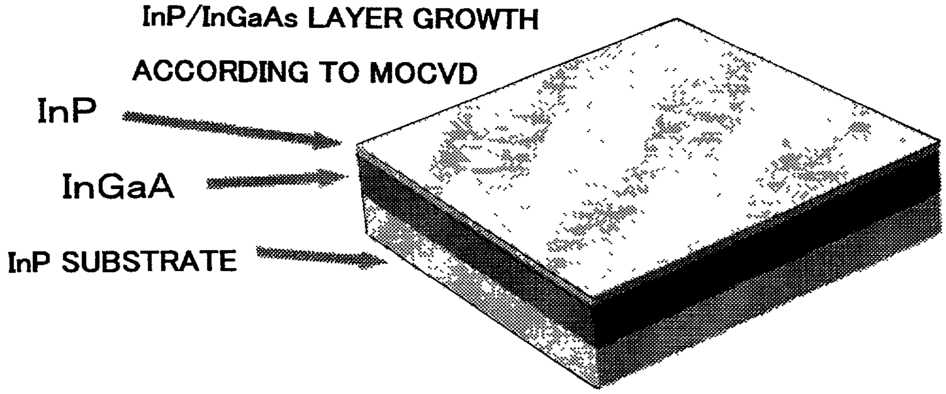


FIG. 2(b)

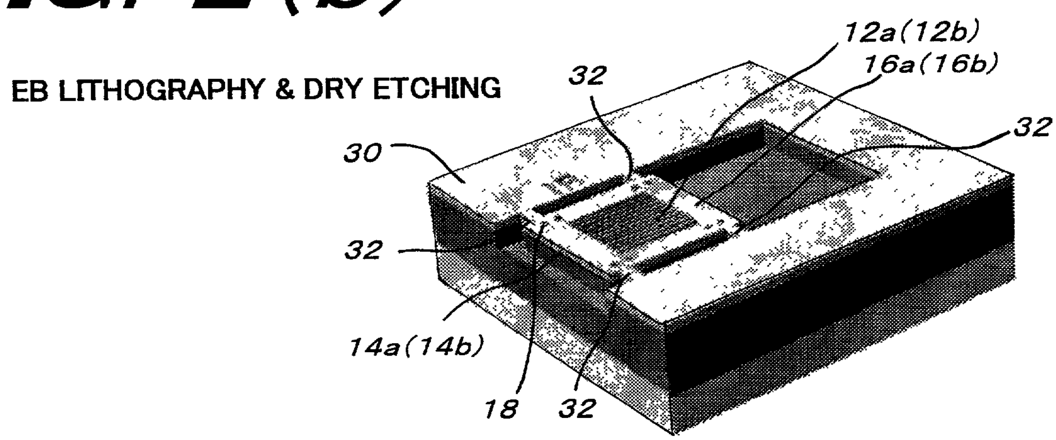


FIG. 2(c)

MAKING TO BE AIR BRIDGE

ACCORDING TO WET ETCHING

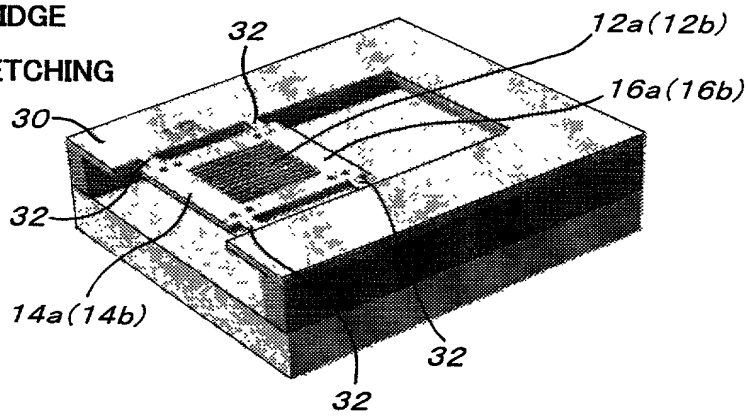
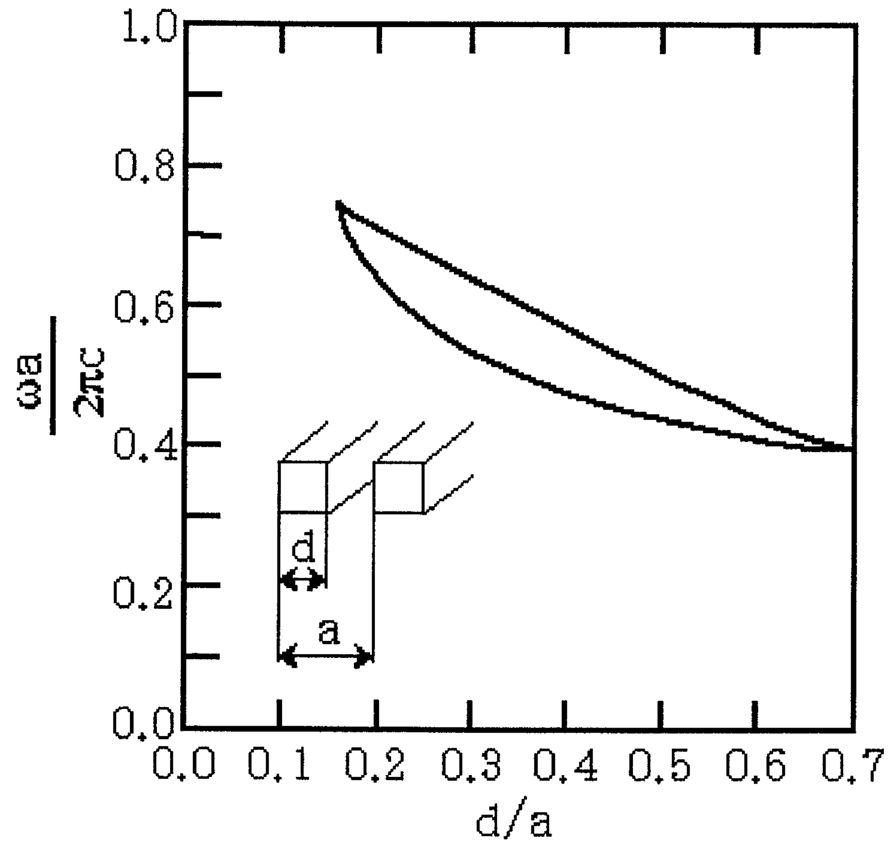
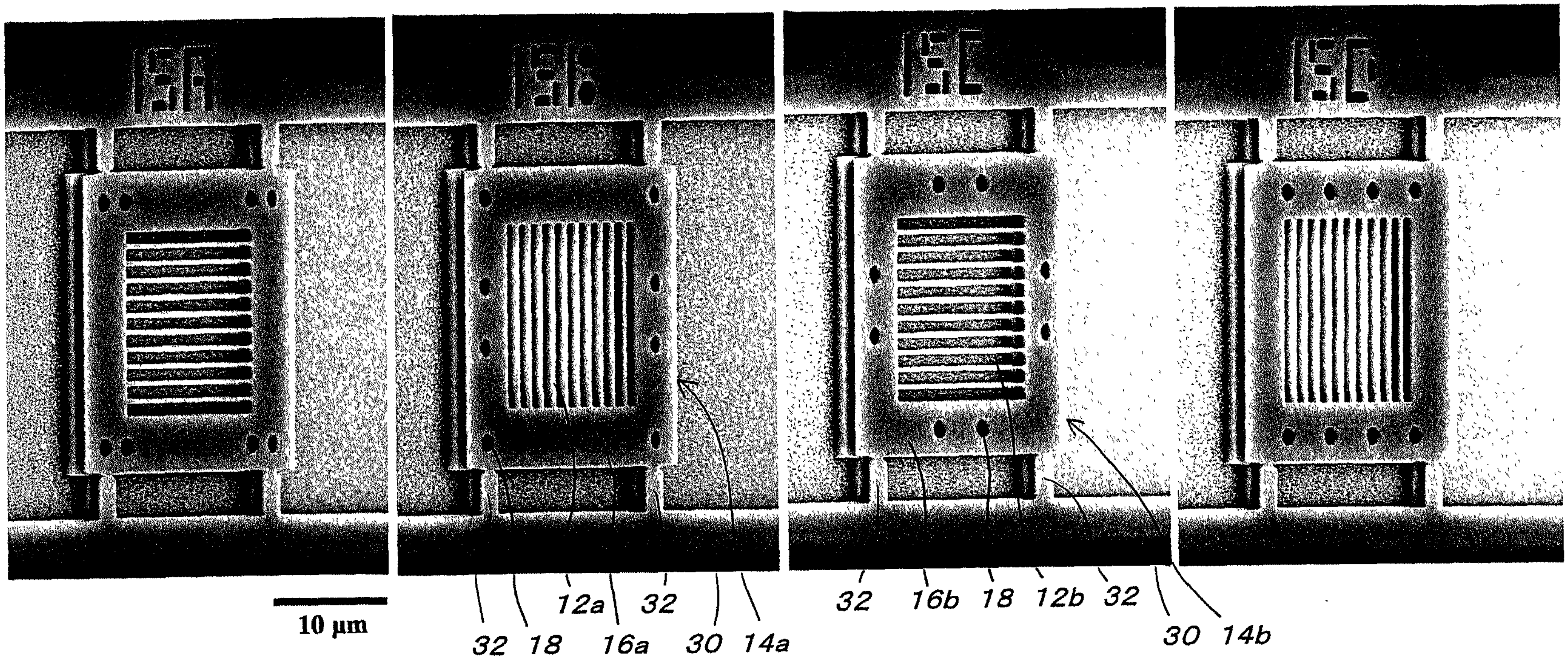


FIG. 3



RELATIONSHIP BETWEEN RATIO OF WIDHT OF BLOCK AND ITS PERIOD, AND REGION WHERE BANDGAP OF 4 MICRON BAND OPENS IN CASE WHEN InP PLATE THICKNESS IS 0.5 MICROMETER

FIG. 4



TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATES
EACH HELD BY NARROW FOUR BRIDGES IN MIDAIR

FIG. 5(a)

AIR-BRIDGING TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE

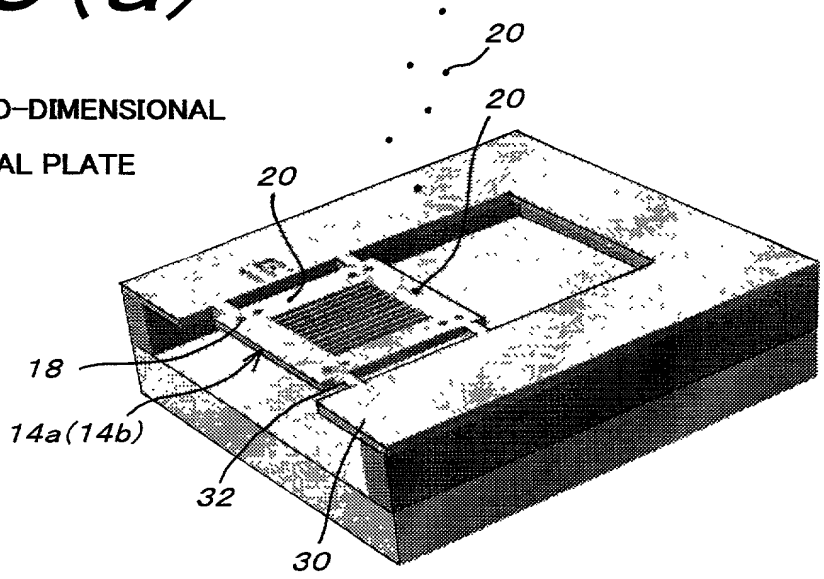


FIG. 5(b)

LOCATING MICROSPHERES ARE INSERTED INTO POSITIONING THROUGH HOLES

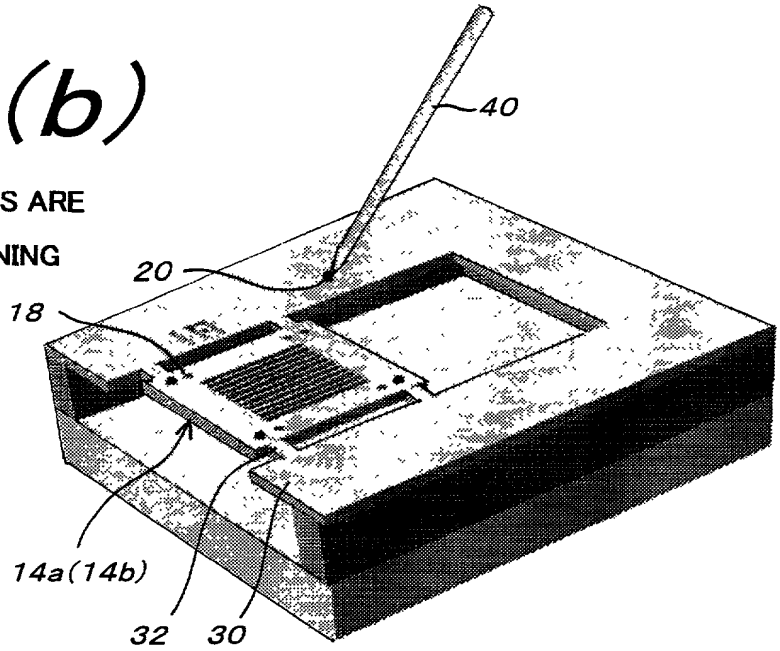


FIG. 6(a)

PATTERN IS TRANSFERRED DOWN

TO InP SUBSTRATE IN CASE OF ETCHING

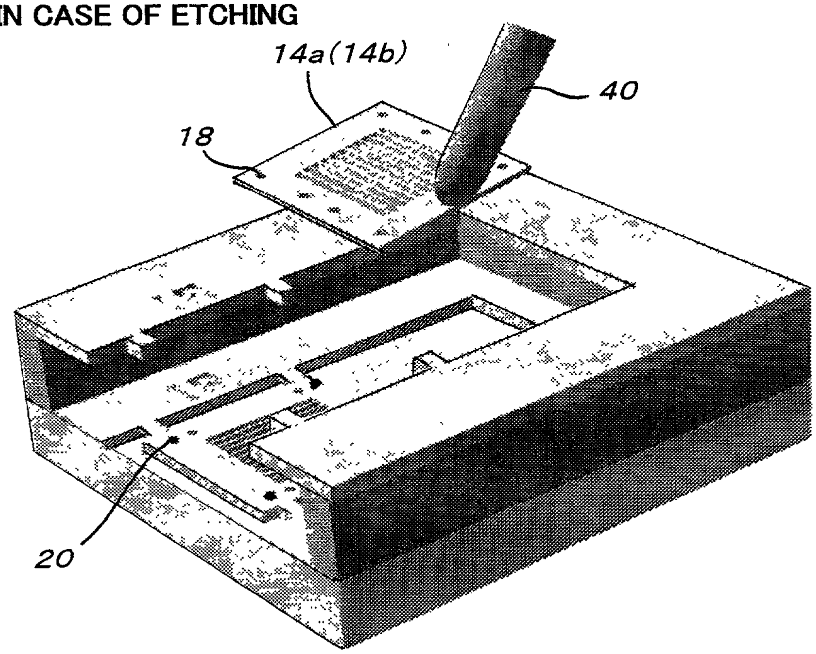


FIG. 6(b)

PATTERN ETCHED ON InP SUBSTRATE IS

FIRST LAYER, AND PLATES ARE

SEQUENTIALLY LAMINATED

THEREON

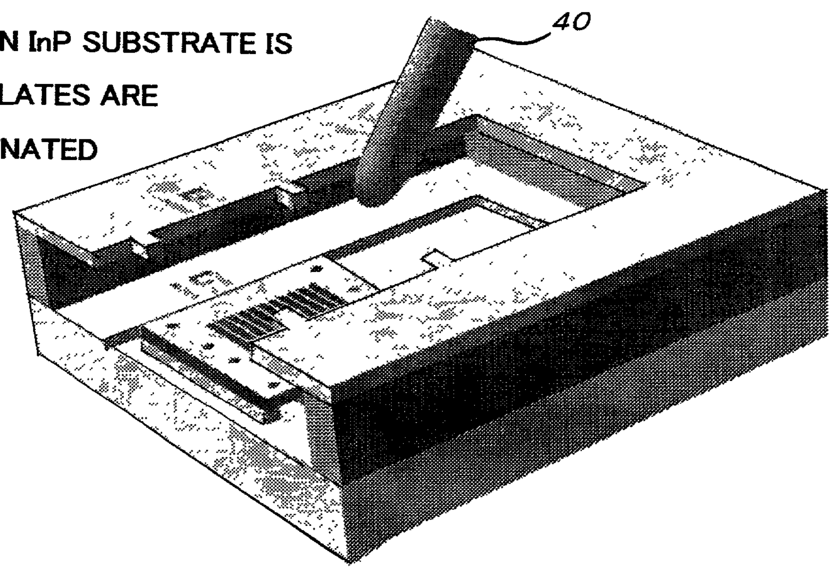


FIG. 7(a)

ANOTHER TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE IS CUT OFF AND PICKED UP

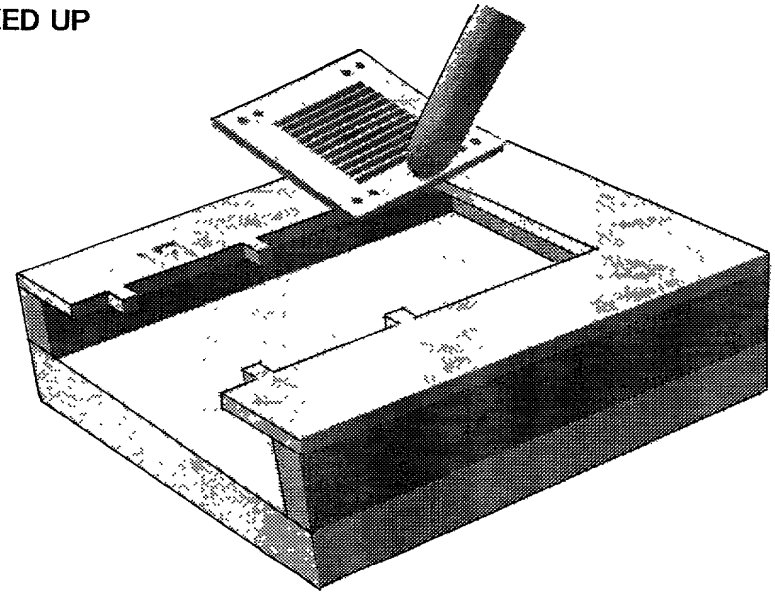


FIG. 7(b)

THE PLATE THUS PICKED UP IS PLACED ON TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE INTO WHICH MICROSPHERES HAVE BEEN INSERTED

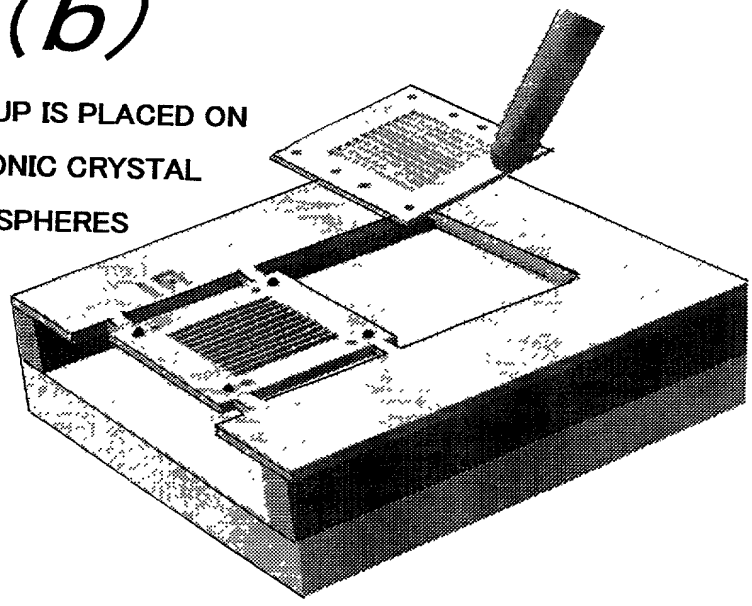


FIG. 8(a)

SPHERES ARE INSERTED INTO POSITIONING HOLES IN PATTERNS TRANSFERRED ON InP SUBSTRATE

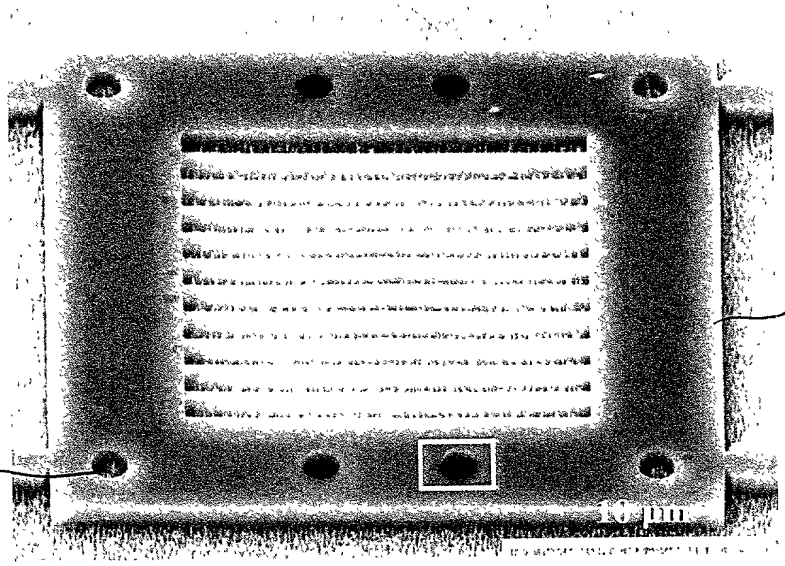


FIG. 8(b)

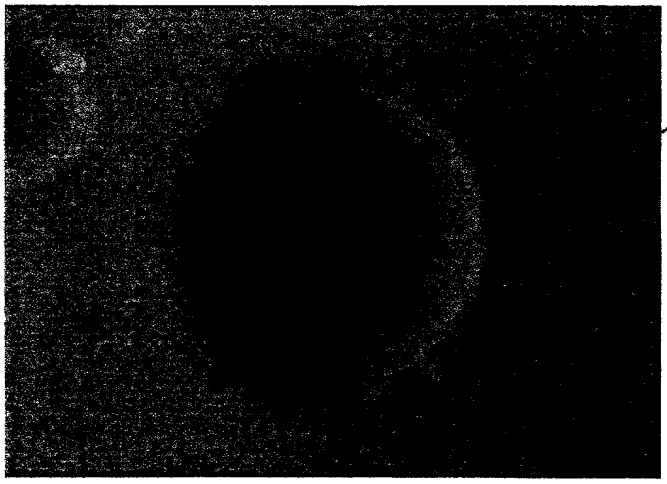


FIG. 9(a)

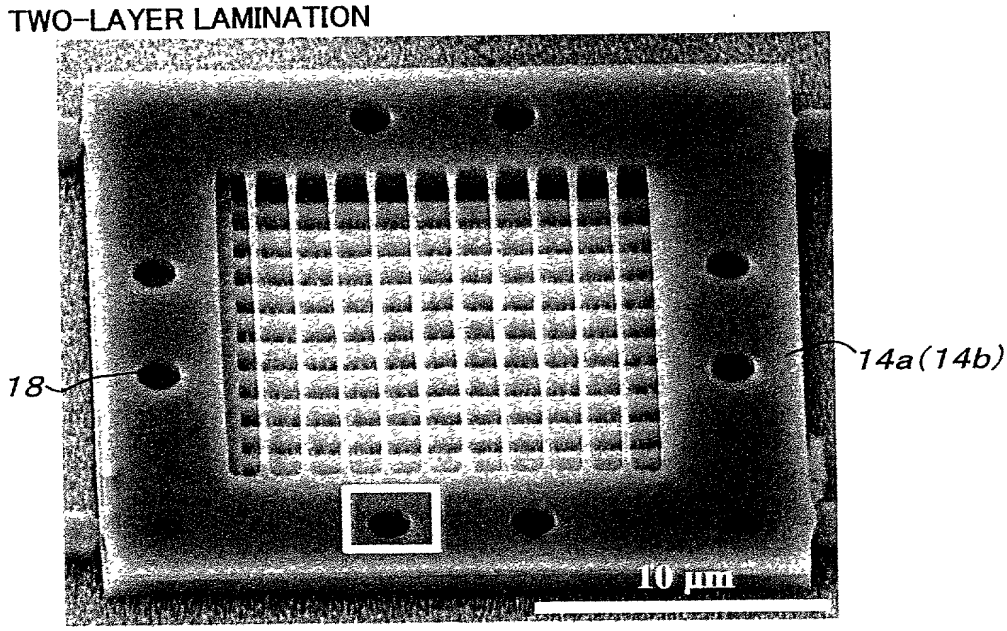


FIG. 9(b)

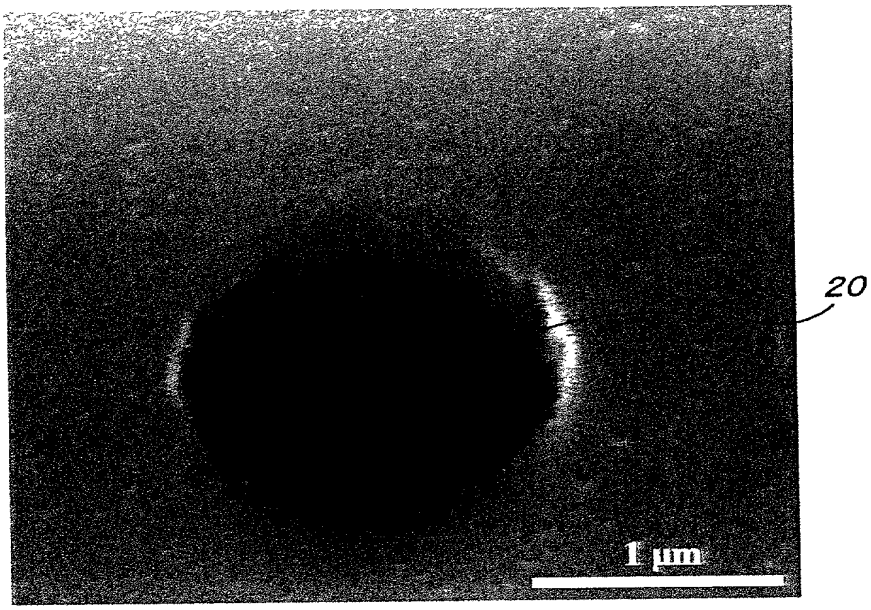


FIG. 10(a)

THREE-LAYER LAMINATION

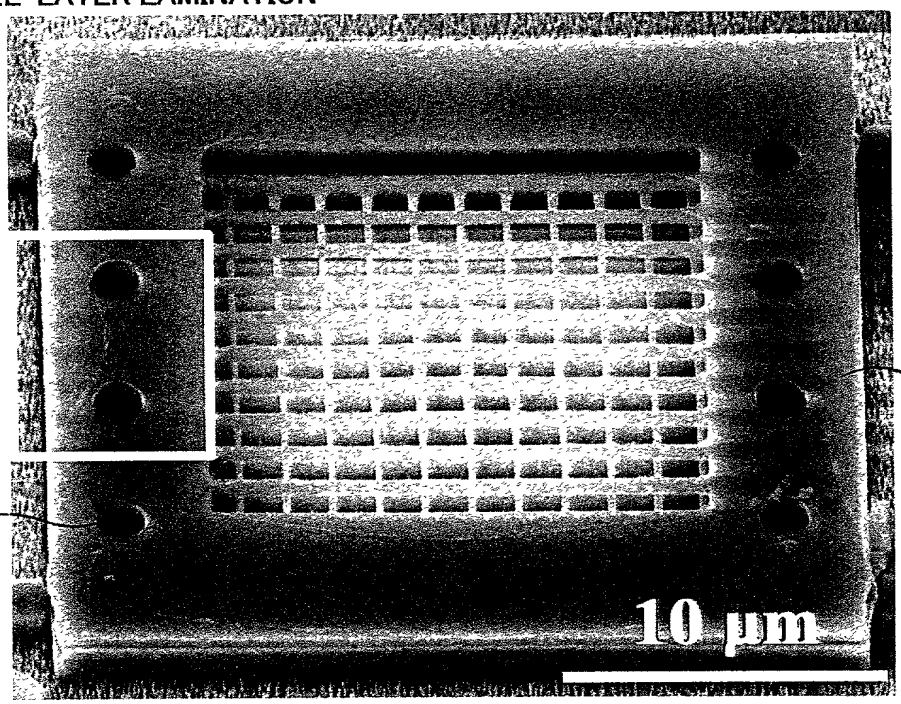


FIG. 10(b)

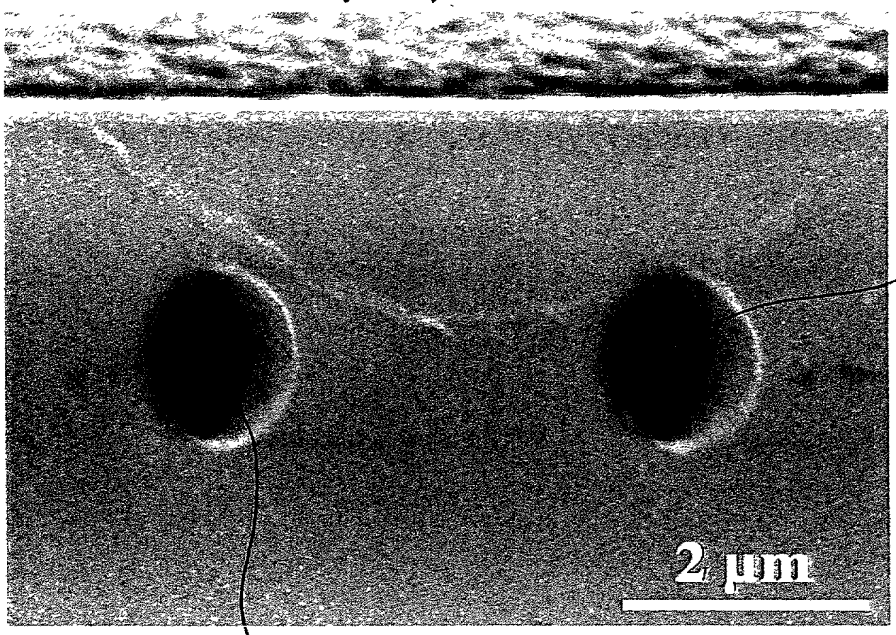
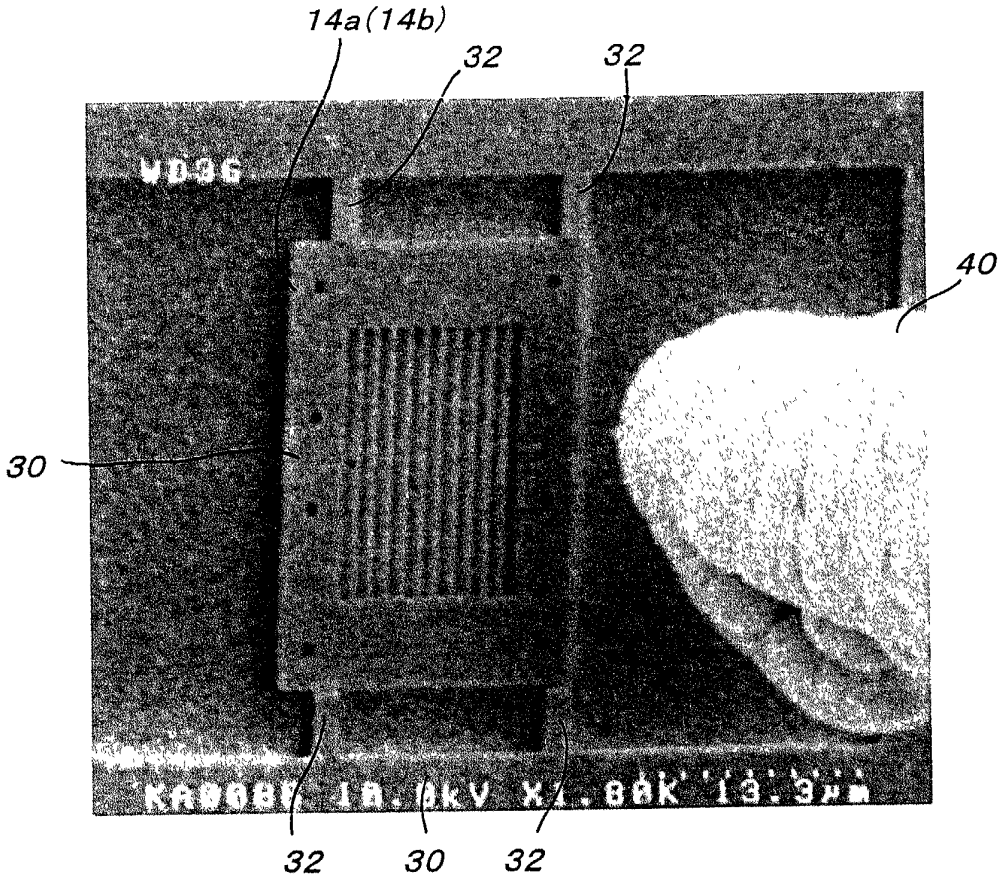
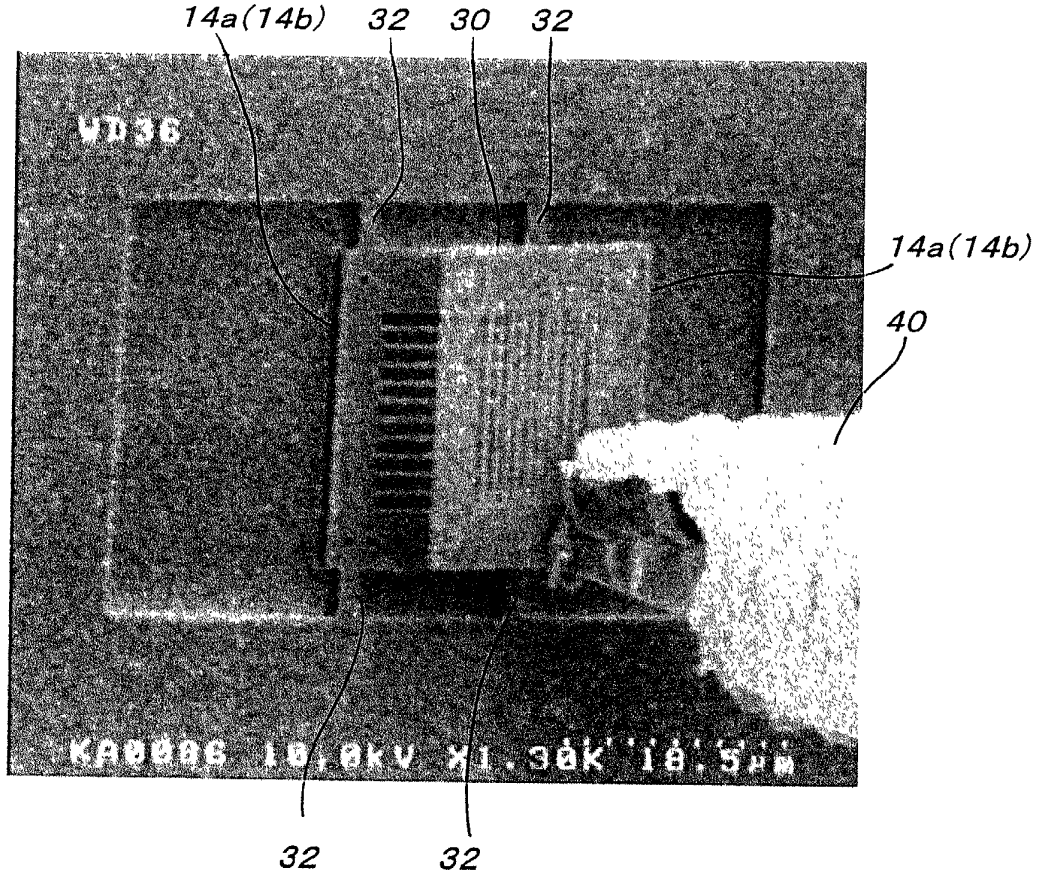


FIG. 11



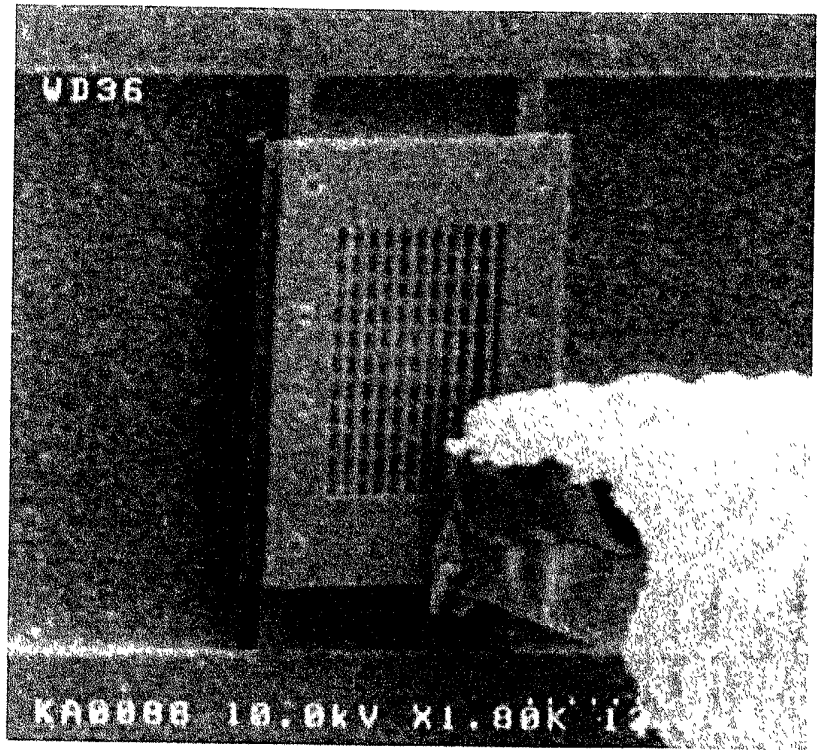
STATE WHEREIN BRIDGES ARE PUSHED BY PROBE TO CUT OFF TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE FROM OUTER HULL REGION OF SUBSTRATE

FIG. 12



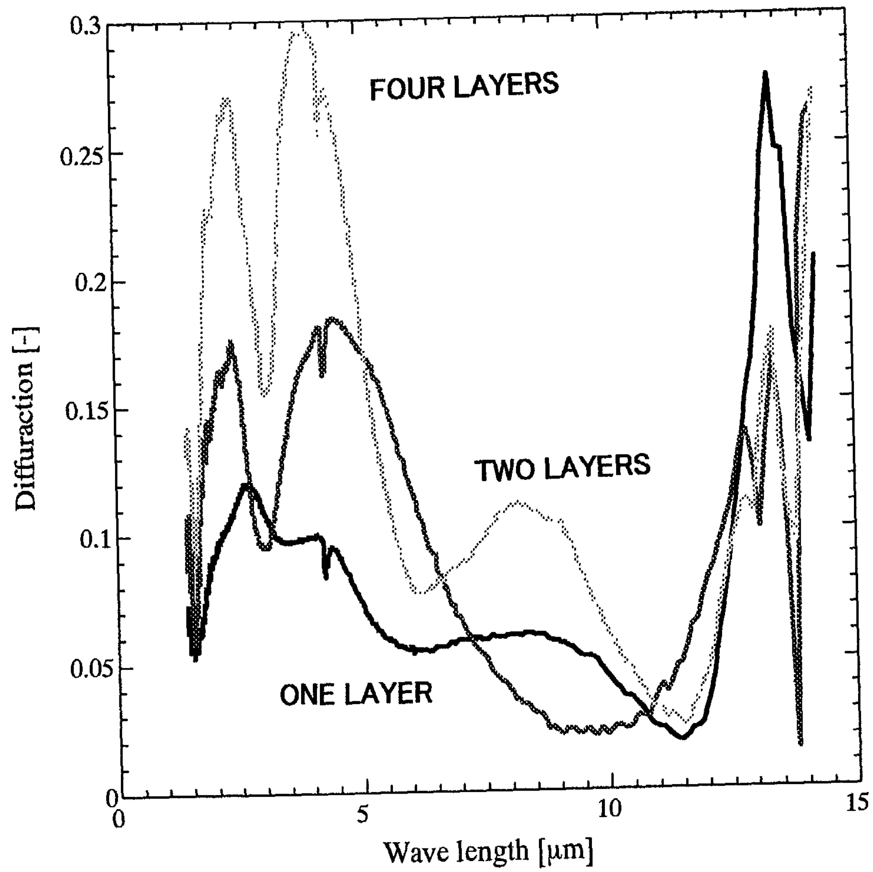
STATE WHEREIN TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE WHICH HAD BEEN CUT OFF AND HAS BEEN PICKED UP BY PROBE IS BROUGHT ON TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE INTO WHICH POSITIONING MICROSPHERES HAVE BEEN ALREADY INSERTED

FIG. 13



STATE WHEREIN TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATES HAVE BEEN SUBSTANTIALLY PERFECTLY SUPERPOSED

FIG. 14



REFLECTION SPECTRA OF THREE-DIMENSIONAL PHOTONIC CRYSTAL

FIG. 15(a)

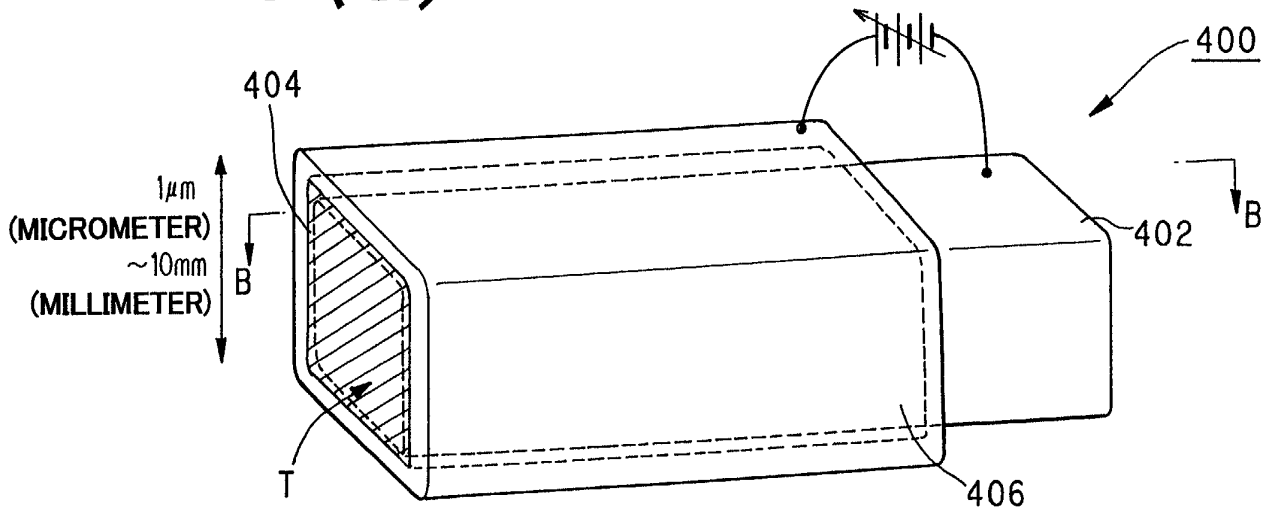


FIG. 15(c)

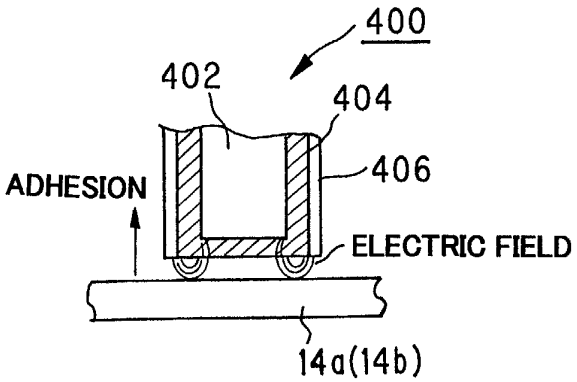


FIG. 15(b)

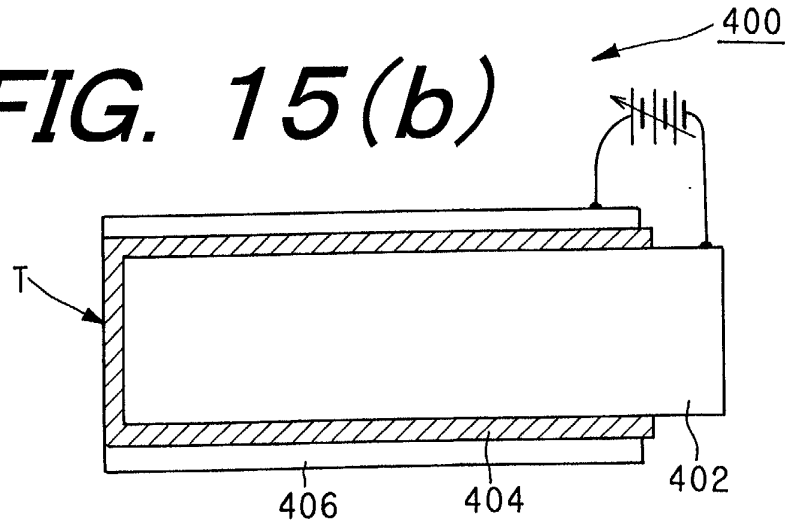
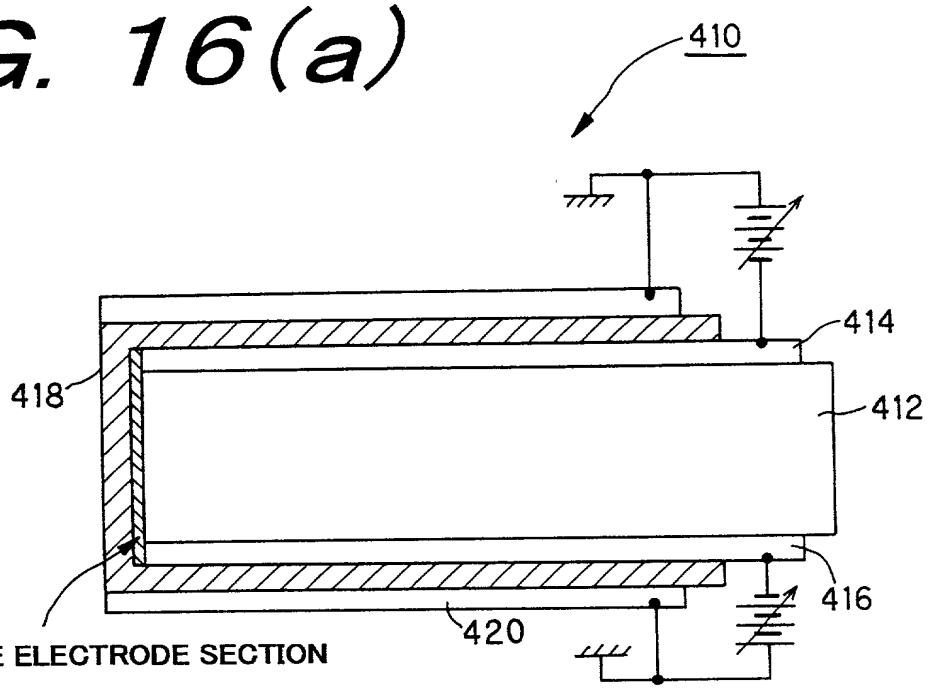


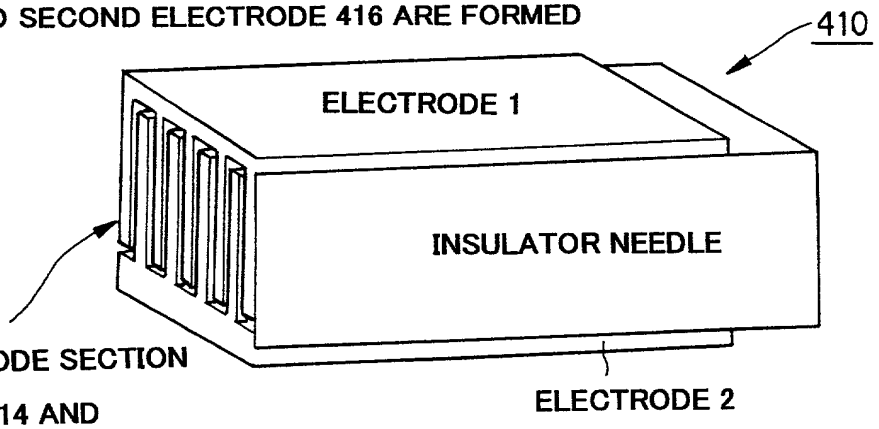
FIG. 16(a)



COMB TYPE ELECTRODE SECTION
(FIRST ELECTRODE 414 AND SECOND ELECTRODE 416)

FIG. 16(b)

FIGURE SHOWING THE CASE WHEN ONLY FIRST ELECTRODE 414 AND SECOND ELECTRODE 416 ARE FORMED



COMB TYPE ELECTRODE SECTION
(FIRST ELECTRODE 414 AND
SECOND ELECTRODE 416)

FIG. 17(a)

CASE WHERE A PART OF PATTERNS IN TWO-DIMENSIONAL PHOTONIC CRYSTAL IS USED TO CONDUCT POSITIONING

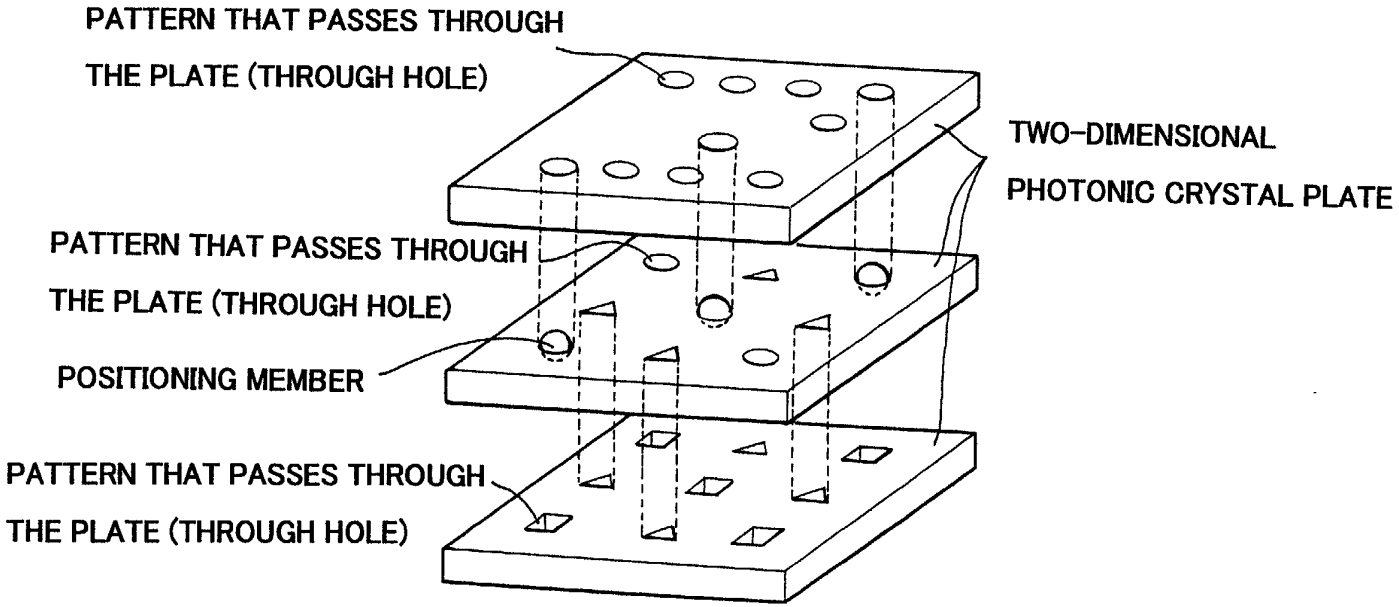


FIG. 17(b)

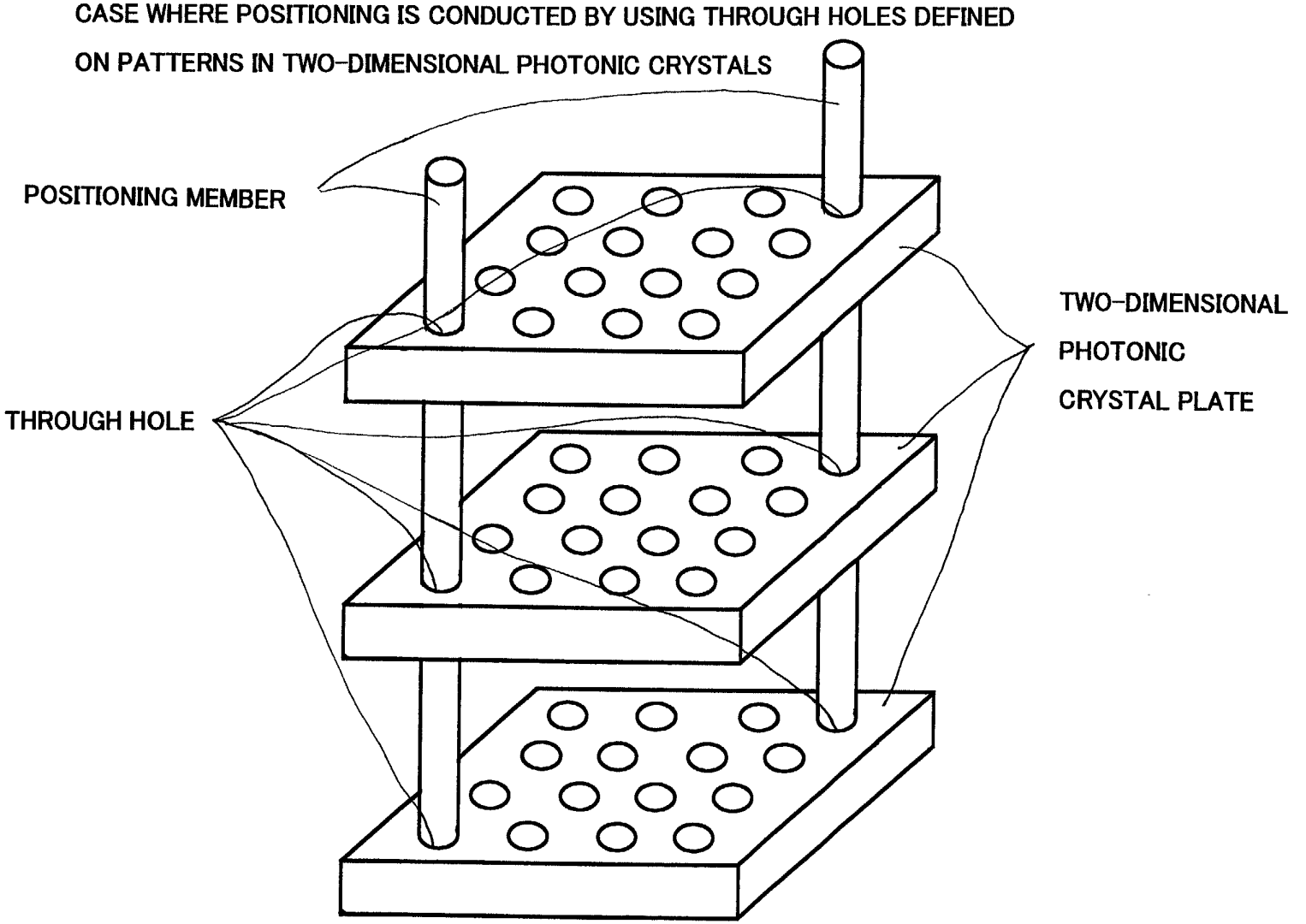

CASE WHERE POSITIONING IS CONDUCTED BY USING THROUGH HOLES DEFINED ON PATTERNS IN TWO-DIMENSIONAL PHOTONIC CRYSTALS
POSITIONING MEMBER
THROUGH HOLE
TWO-DIMENSIONAL PHOTONIC CRYSTAL PLATE

FIG. 18(a)

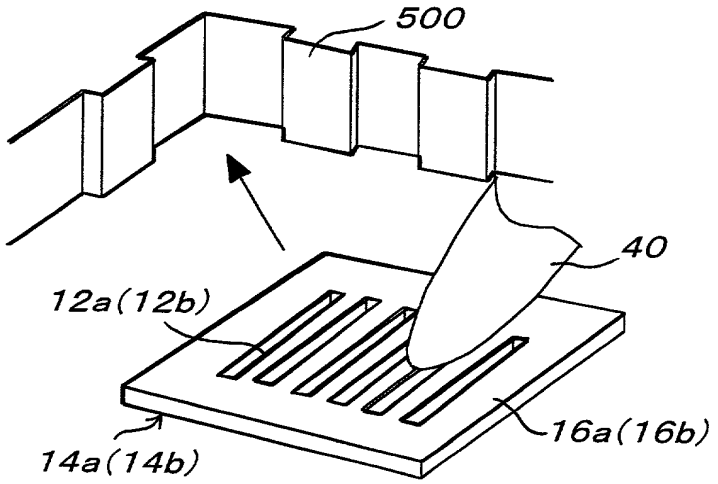


FIG. 18(b)

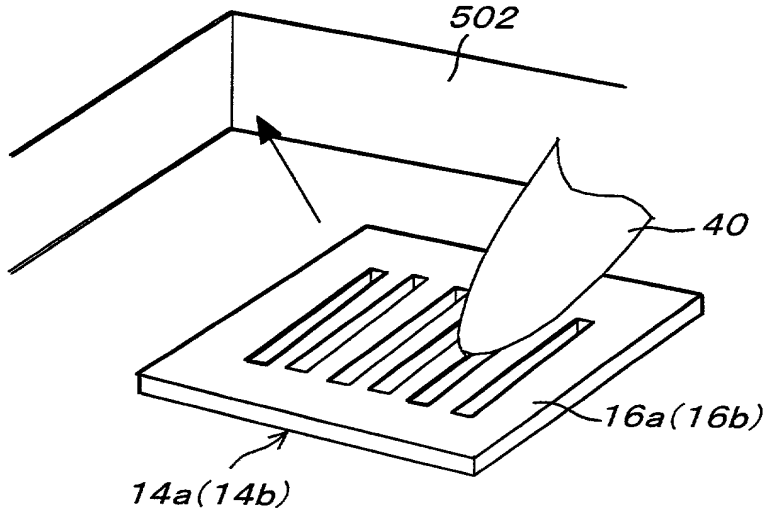


FIG. 18(c)

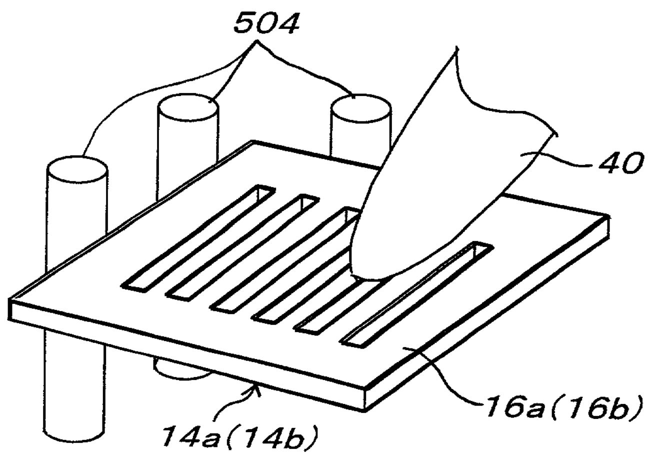


FIG. 18(d)

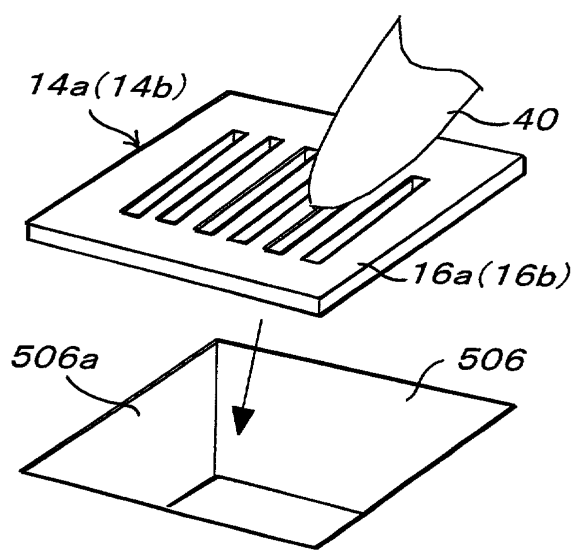


FIG. 19(a)

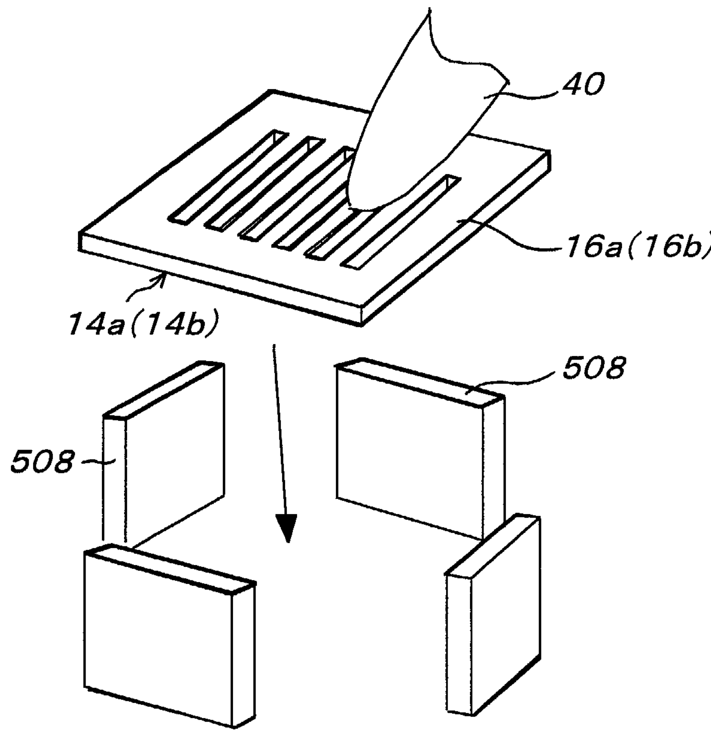


FIG. 19(b)